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Application Serial No. 10/577,017

Reply to office action of November 2, 2009

PATENT

Docket: CU-4798

**Amendments to the Claims**

The listing of claims presented below will replace all prior versions, and listings, of claims in the application.

**Listing of claims:**

1. **(currently amended)** An electronic device comprising:  
an electronic element; and  
an interposer including an interposer base to which the electronic element is joined, and a plurality of post electrodes connected to corresponding electrodes of the electronic element;

wherein the electronic element and the interposer base are made of silicon **and the interposer base comprises a silicon wafer piece,**

said interposer base being defined by an upper principal surface, a lower principal surface and a sidewall surface connecting said upper principal surface and said lower principal surface, said plurality of post electrodes extending between said upper principal surface and said lower principal surface of said interposer base **so as to penetrate through the silicon wafer piece,** each of said plurality of post electrodes having a top end exposed at said upper principal surface, each of said plurality of post electrodes having a bottom end exposed at said lower principal surface,

said electronic element having a top principal surface in direct contact with said lower principal surface of said interposer, said electronic element carrying said plurality of electrodes respectively in correspondence to said plurality of post electrodes, said plurality of electrodes being exposed at said top principal surface of said electronic element and in contact with corresponding bottom ends of said plurality of post electrodes.

2. **(currently amended)** An electronic device comprising:  
an electronic element; and  
an interposer including an interposer base to which the electronic element is joined, and a plurality of post electrodes that are disposed inside one or more through

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holes formed in the interposer base and are connected to corresponding electrodes of the electronic element,

wherein the electronic element and the interposer base are made of silicon and the interposer base comprises a silicon wafer piece,

said interposer base being defined by an upper principal surface, a lower principal surface and a sidewall surface connecting said upper principal surface and said lower principal surface, said one or more through holes extending between said upper principal surface and said lower principal surface of said interposer base so as to penetrate through the silicon wafer piece, each of said plurality of post electrodes having a top end exposed at said upper principal surface, each of said plurality of post electrodes having bottom end exposed at said lower principal surface,

said electronic element having a top principal surface in direct contact with said lower principal surface of said interposer, said electronic element carrying said electrodes respectively corresponding to said plurality of post electrodes, said plurality of electrodes being exposed at said top principal surface of said electronic element and in contact with corresponding bottom ends of said plurality of post electrodes.

3. (original) The electronic device as claimed in claim 1 or 2, wherein the electronic element and the interposer base are made of the same material.

4. (cancelled)

5. (currently amended) The electronic device as claimed in claim 1 or 2, wherein the electronic comprises a first insulation layer **[[is]]** formed at least in a position on the electronic element to be joined to the interposer base; and the interposer base comprises a second insulation layer **[[ls]]** formed at least in a position on the interposer base to be joined to the electronic element.

6. (original) The electronic device as claimed in claim 2, wherein the post electrodes are formed in the single through hole.

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7. (original) The electronic device as claimed in claim 1 or 2, wherein a recess is formed in the interposer base such that the electronic element is accommodated in the recess.
8. (original) The electronic device as claimed in claim 1 or 2, wherein plural of the electronic elements are mounted to the interposer base.
9. (original) The electronic device as claimed in claim 1 or 2, wherein a back surface of the electronic element is joined to the interposer base.
10. (original) The electronic device as claimed in claim 1 or 2, wherein a sealing resin encapsulating the electronic element is disposed on the interposer base.
11. (original) The electronic device as claimed in claim 1 or 2, wherein the electronic element is a semiconductor chip.
12. (original) The electronic device as claimed in claim 1 or 2, wherein the electronic element is a passive element.
13. (withdrawn) A method of manufacturing an electronic device, comprising:
  - an integrating step of integrating an interposer base in which a through hole is formed and an electronic element with each other by bringing a surface of the interposer base and a surface of the electronic element into direct contact with each other;
  - a post electrode forming step of forming a post electrode inside the through hole and directly on an electrode of the electronic element after the integrating step;
  - a rewiring forming step of forming a rewiring layer electrically connected to the post electrode; and
  - an external connection terminal forming step of forming an external connection terminal on the rewiring layer.
14. (withdrawn) A method of manufacturing an electronic device, comprising:

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a post electrode forming step of forming a post electrode directly on an electrode of an electronic element;

an integrating step of integrating an interposer base in which a through hole is formed and the electronic element with each other by bringing a surface of the interposer base and a surface of the electronic element into direct contact with each other after the post electrode forming step;

a rewiring forming step of forming a rewiring layer electrically connected to the post electrode; and

an external connection terminal forming step of forming an external connection terminal on the rewiring layer.

15. (withdrawn) The method of forming an electronic device as claimed in claim 14, further comprising:

a protective layer forming step of forming a protective layer on the electronic element, the protective layer being made of an insulating material and adapted to hold the post electrode.

16. (currently amended) An electronic device comprising:

an electronic element; and

an interposer to which the electronic element is joined, and the interposer including an interposer base, said interposer base comprising a silicon wafer piece and said interposer base being defined by an upper principal surface, a lower principal surface and a sidewall surface connecting said upper principal surface and said lower principal surface;

wherein said lower principal surface of said interposer base being in direct contact to a top principal surface of said electronic element, and

wherein the electronic element and the interposer base are made of silicon.

17. (original) The electronic device as claimed in claim 16,  
wherein the electronic element is an optical device; and  
the interposer is provided with an optical waveguide optically connected to the

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optical device.

18. (new) The electronic device as claimed in claim 1, wherein the portion of the interposer base and the portion of the electronic element that are in direct contact with each other are the same material.